Hydraulics & Fluid Machineries MCQ Question Answer

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Question: 1. The discharge through a reaction turbine with increase in unit speed

Option A. Increases
Option B. Decreases
Option C. Remain unaffected
Option D. First increases and then decreases

Question: 2. Head developed by a centrifugal pump depends on

Option A. Impeller diameter
Option B. Speed
Option C. Fluid density
Option D. Both (A) and (B) above

Question: 3. The ratio of quantity of liquid discharged per second from the pump to the quantity of liquid passing per second through the impeller is known as

Option A. Manometric efficiency
Option B. Mechanical efficiency
Option C. Overall efficiency
Option D. Volumetric efficiency

Question: 4. Any change in load is adjusted by adjusting following parameter on turbine

Option A. Net head
Option B. Absolute velocity
Option C. Blade velocity
Option D. Flow

Question: 5. The force exerted by a jet of water (in a direction normal to flow) impinging on a fixed plate inclined at an angle **θ** with the jet is

Option A. $waV/2g \times \sin\theta$
Option B. $waV/g \times \sin\theta$
Option C. $waV^2/2g \times \sin 2\theta$
Option D. $waV^2/g \times \sin\theta$

Question: 6. The mechanical efficiency of an impulse turbine is

Option A. Ratio of the actual power produced by the turbine to the energy actually supplied by the turbine
Option B. Ratio of the actual work available at the turbine to the energy imparted to the wheel
Option C. Ratio of the Work done on the wheel to the energy of the jet
Option D. None of the above

Question: 7. The water in a jet propelled boat is drawn through the openings facing the direction of motion of the boat. The efficiency of propulsion is given by

Option A. $2V/(v_r - v)$

Option B. $2V/(v_r + v)$

Option C. $V/(v_r - v)$

Option D. $V/(v_r + v)$

Question: 8. The flow ratio of Francis turbine is defined as the ratio of the

Option A. Velocity of flow at inlet to the theoretical jet velocity

Option B. Theoretical velocity of jet to the velocity of flow at inlet

Option C. Velocity of runner at inlet to the velocity of flow at inlet

Option D. None of the above

Question: 9. A ship with jet propulsion draws water through inlet orifices at right angles to the direction of its motion. The propelling force of the jet is (where a = Area of the jet, Vr = Relative velocity of the jet and ship = V + v, v = Velocity of the ship, and V = Velocity of the jet issuing from the ship)

Option A. $waVr /g \times (Vr + v)$

Option B. $waVr /g \times (Vr - v)$

Option C. $waVr /g \times (Vr + v)^2$

Option D. $waVr /g \times (Vr - v)^2$

Question: 10. Saving of work done and power by fitting an air vessel to single acting reciprocating pump is of the order of

Option A. 39.2 %

Option B. 49.2 %

Option C. 68.8 %

Option D. 84.8 %

Question: 11. Manometric head, in case of a centrifugal pump, is equal to

Option A. Suction lift + Loss of head in suction pipe due to friction + Delivery lift + Loss of head in delivery pipe due to friction + Velocity head in the delivery pipe

Option B. Workdone per kN of water Losses within the impeller

Option C. Energy per kN at outlet of impeller Energy per kN at inlet of impeller

Option D. All of the above

Question: 12. Medium specific speed of a pump implies it is

Option A. Centrifugal pump

Option B. Mixed flow pump

Option C. Axial flow pump

Option D. Any one of the above

Question: 13. The discharge through a turbine is

Option A. Directly proportional to $H^{1/2}$

Option B. Inversely proportional to $H^{1/2}$

Option C. Directly proportional to $H^{3/2}$

Option D. Inversely proportional to $H^{3/2}$

Question: 14. The specific speed of a hydraulic turbine depends upon

Option A. Speed and power developed

Option B. Discharge and power developed

Option C. Speed and head of water

Option D. Speed, power developed and head of water

Question: 15. The impeller of a centrifugal pump may have

Option A. Volute casing

Option B. Volute casing with guide blades

Option C. Vortex casing

Option D. Any one of these

Question: 16. The discharge through a reaction turbine _____ with the increase in unit speed.

Option A. Decreases

Option B. Increases

Option C. Remain same

Option D. None of these

Question: 17. In a reciprocating pump, air vessels are used to

Option A. Smoothen the flow

Option B. Reduce suction head

Option C. Increase delivery head

Option D. Reduce acceleration head

Question: 18. In a centrifugal pump casing, the flow of water leaving the impeller, is

Option A. Rectilinear flow

Option B. Radial flow

Option C. Free vortex motion

Option D. Forced vortex

Question: 19. A hydraulic ram is a device used to

Option A. Store the energy of water

Option B. Increase the pressure of water

Option C. To lift water from deep wells

Option D. To lift small quantity of water to a greater height when a large quantity of water is

available at a smaller height

Question: 20. Puck up the wrong statement about centrifugal pump

Option A. Discharge a diameter

Option B. Head a speed^2

Option C. Head a diameter

Option D. Power a speed^4

Question: 21. The efficiency of jet propulsion for a ship with inlet orifices at right angles to the direction of motion of ship is given by

Option A. $[2(V_r - v)\ v]/\ V_r^2$

Option B. $2(V_r + v)\ v]/\ V_r^2$

Option C. $[(V_r - v)\ v]/\ V_r$

Option D. $[(V_r + v)\ v]/\ V_r$

Question: 22. Impulse turbine is generally fitted

Option A. At the level of tail race

Option B. Little above the tail race

Option C. Slightly below the tail race

Option D. About 2.5 m above the tail race to avoid cavitations.

Question: 23. Casting of a centrifugal pump is designed so as to minimize

Option A. Friction loss

Option B. Cavitations

Option C. Static head

Option D. Loss of kinetic energy

Question: 24. A Pelton wheel develops 1750 kW under a head of 100 metres while running at 200 r.p.m. and discharging 2500 litres of water per second. The unit speed of the wheel is

Option A. 10 r.p.m.

Option B. 20 r.p.m.

Option C. 40 r.p.m.

Option D. 80 r.p.m.

Question: 25. Hydraulic accumulator is used for

Option A. Accumulating oil

Option B. Supplying large quantities of oil for very short duration

Option C. Generally high pressures to operate hydraulic machines

Option D. Supplying energy when main supply fails

Question: 26. The static head of a centrifugal pump is equal to the _____ of suction head and delivery head.

Option A. Product

Option B. Difference

Option C. Sum

Option D. None of these

Question: 27. In reaction turbine, draft tube is used

Option A. To transport water downstream without eddies

Option B. To convert the kinetic energy to flow energy by a gradual expansion of the flow cross-section

Option C. For safety of turbine

Option D. To increase flow rate

Question: 28. A Pelton wheel develops 1750 kW under a head of 100 metres while running at 200 r.p.m. and discharging 2500 litres of water per second. The unit power of the wheel is

Option A. 0.25 kW

Option B. 0.75 kW

Option C. 1.75 kW

Option D. 3.75 kW

Question: 29. A hydraulic intensifier normally consists of

Option A. Two cylinders, two rams and a storage device

Option B. A cylinder and a ram

Option C. Two coaxial rams and two cylinders

Option D. A cylinder, a piston, storage tank and control valve

Question: 30. Which of the following pump is generally used to pump highly viscous fluid?

Option A. Centrifugal pump

Option B. Reciprocating pump

Option C. Air lift pump

Option D. Screw pump

Answer Sheet

1	B	
2	D	
3	D	
4	D	
5	C	
6	B	
7	B	
8	A	
9	B	
10	D	
11	D	
12	B	
13	A	
14	D	
15	D	
16	A	
17	D	
18	C	
19	D	
20	A	
21	A	
22	B	
23	D	
24	B	
25	D	
26	C	
27	B	
28	C	
29	C	
30	D	